

WEST[Generate Collection](#)[Print](#)**Search Results - Record(s) 1 through 10 of 10 returned.**☒ 1. Document ID: US 6423445 B1

L1: Entry 1 of 10

File: USPT

Jul 23, 2002

US-PAT-NO: 6423445

DOCUMENT-IDENTIFIER: US 6423445 B1

TITLE: Alkaline battery separators

DATE-ISSUED: July 23, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kato; Koichi	Ibaraki			JP
Sato; Kazuya	Ibaraki			JP
Tanaka; Masanao	Ibaraki			JP

US-CL-CURRENT: 429/142; 428/392, 428/515, 428/516, 429/253, 429/254

ABSTRACT:

An alkaline battery separator comprising a gas-permeable sheet which contains a hydrophilic portion carrying a methacrylic/ethylene copolymer component having a crystallinity of 25% or more on at least a part of a surface of said hydrophilic portion.

14 Claims, 0 Drawing figures

Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	ROC	Draw Desc	Image
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☒ 2. Document ID: US 6355375 B2

L1: Entry 2 of 10

File: USPT

Mar 12, 2002

US-PAT-NO: 6355375

DOCUMENT-IDENTIFIER: US 6355375 B2

TITLE: Alkaline battery separator and process for producing the same

DATE-ISSUED: March 12, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Tanaka; Masanao	Ibaraki			JP
Tokutake; Nobutoshi	Ibaraki			JP

US-CL-CURRENT: 429/142; 429/144, 429/206, 429/247, 429/249, 429/250, 429/251,
429/253, 429/254

ABSTRACT:

An alkaline battery separator comprising a nonwoven fabric containing one or more mixture layers of entangled short fibers and entangled long fibers, wherein a fiber length of the short fibers is from 1 mm to less than 25 mm, a fiber length of the long fibers is 25 mm or more, and a total thickness of all of the mixture layers accounts for not less than one-third of a whole thickness of the nonwoven fabric is disclosed. The alkaline battery separator according to the present invention exhibits an excellent electrolyte-holding capacity, tensile strength, tear strength and bending resistance, and can be used to stably prepare a battery. Electrode flash rarely penetrates the separator, to thereby cause a short circuit between electrodes.

23 Claims, 5 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	ENC	Draw Desc	Image
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☒ 3. Document ID: US 6348286 B1

L1: Entry 3 of 10

File: USPT

Feb 19, 2002

US-PAT-NO: 6348286

DOCUMENT-IDENTIFIER: US 6348286 B1

TITLE: Alkaline battery separator and process for producing the same

DATE-ISSUED: February 19, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Tanaka; Masanao	Ibaraki			JP
Sato; Kazuya	Ibaraki			JP
Kato; Koichi	Ibaraki			JP
Ito; Yasuhiro	Ibaraki			JP
Yamazaki; Hiroaki	Ibaraki			JP
Hirooka; Masaki	Ibaraki			JP
Kawatsu; Yoshiaki	Ibaraki			JP

US-CL-CURRENT: 429/247; 429/248, 429/249

ABSTRACT:

An alkaline battery separator comprising a fiber sheet containing, on outer surfaces of fibers forming a surface of the fiber sheet, a substance having a peak of a bond energy at 530.5 to 531.5 eV which is measured by an X-ray photoelectron spectrometer at a photoelectron-taking-off angle of about 30.degree.; a fiber sheet containing a larger amount of carboxyl groups bonded to surfaces of fibers forming an inside of the fiber sheet than an amount of carboxyl groups bonded to outer surfaces of fibers forming a surface of the fiber sheet; or a fiber sheet capable of entrapping ammonia in an amount of 0.4 mmol/g or more in average is disclosed.

28 Claims, 3 Drawing figures

Exemplary Claim Number: 1
Number of Drawing Sheets: 3

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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NUM	Draw Desc	Image
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☒ 4. Document ID: US 6284680 B1

L1: Entry 4 of 10

File: USPT

Sep 4, 2001

US-PAT-NO: 6284680

DOCUMENT-IDENTIFIER: US 6284680 B1

TITLE: Nonwoven fabric containing fine fibers, and a filter material

DATE-ISSUED: September 4, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Aikawa; Toshio	Ibaraki			JP
Miyaguchi; Noriko	Ibaraki			JP
Tarao; Takashi	Ibaraki			JP
Kobayashi; Hitoshi	Shiga			JP

US-CL-CURRENT: 442/363; 442/340, 442/361, 442/411

ABSTRACT:

A nonwoven fabric prepared from fibers which are not substantially fibrillated and have a diameter of less than 20 .mu.m, by fusing a fiber web comprising fine fibers having a diameter of 4 .mu.m or less, and adhesive fibers having a diameter ranging from 8 .mu.m to less than 20 .mu.m, wherein a maximum pore size in the nonwoven fabric is not more than twice the mean flow pore size of the nonwoven fabric is disclosed.

6 Claims, 4 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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NUM	Draw Desc	Image
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☒ 5. Document ID: US 6183913 B1

L1: Entry 5 of 10

File: USPT

Feb 6, 2001

US-PAT-NO: 6183913

DOCUMENT-IDENTIFIER: US 6183913 B1

TITLE: Alkaline battery separator and process for producing the same

DATE-ISSUED: February 6, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Tanaka; Masanao	Ibaraki			JP
Kimura; Koji	Ibaraki			JP
Tokutake; Nobutoshi	Ibaraki			JP

US-CL-CURRENT: 429/254; 429/249

ABSTRACT:

An alkaline battery separator comprising a hydrophilic nonwoven fabric obtainable by heat-fusing and hydro-entangling (1) polyolefin dividable composite fibers having an average fiber length of 20 to 60 mm, (2) high-strength fibers having an average fiber length of 30 to 60 mm and a fiber strength of 5 g/denier or more, and (3) polyolefin heat-sensitive-adhesive fibers having an average fiber length of 30 to 60 mm, to obtain a heat-fused and hydro-entangled nonwoven fabric by a dry-laid method, and imparting a hydrophilic property to the resulting heat-fused and hydro-entangled nonwoven fabric; these high-strength fibers accounting for 20 to 45 mass % with respect to a total mass of the polyolefin dividable composite fibers, the high-strength fibers and the polyolefin heat-sensitive-adhesive fibers. The alkaline battery separator exhibits an excellent breaking strength, and has practical and sufficient tensile strength and electrolyte-holding capacity properties.

15 Claims, 5 Drawing figures

Exemplary Claim Number: 13

Number of Drawing Sheets: 2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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FORM	Draw Desc	Image
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☒ 6. Document ID: US 6037079 A

L1: Entry 6 of 10

File: USPT

Mar 14, 2000

US-PAT-NO: 6037079

DOCUMENT-IDENTIFIER: US 6037079 A

TITLE: Alkaline battery separator and process for producing the same

DATE-ISSUED: March 14, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Tanaka; Masanao	Ibaraki			JP
Tokutake; Nobutoshi	Ibaraki			JP

US-CL-CURRENT: 429/142; 429/144, 429/247, 429/250

ABSTRACT:

An alkaline battery separator comprising a nonwoven fabric containing one or more mixture layers of entangled short fibers and entangled long fibers, wherein a fiber length of the short fibers is from 1 mm to less than 25 mm, a fiber length of the long fibers is 25 mm or more, and a total thickness of all of the mixture layers accounts for not less than one-third of a whole thickness of the nonwoven fabric is disclosed. The alkaline battery separator according to the present invention exhibits an excellent electrolyte-holding capacity, tensile strength, tear strength and bending resistance, and can be used to stably prepare a battery. Electrode flash rarely penetrate the separator, to thereby cause a short circuit between electrodes.

5 Claims, 5 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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NUMC	Draw Desc	Image
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☒ 7. Document ID: US 6030727 A

L1: Entry 7 of 10

File: USPT

Feb 29, 2000

US-PAT-NO: 6030727

DOCUMENT-IDENTIFIER: US 6030727 A

TITLE: Alkaline battery separator and process for producing the same

DATE-ISSUED: February 29, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Tanaka; Masanao	Ibaraki			JP
Tokutake; Nobutoshi	Ibaraki			JP

US-CL-CURRENT: 429/250; 264/260, 427/222, 429/254

ABSTRACT:

An alkaline battery separator comprising a hydrophilic nonwoven fabric obtainable from a fiber web prepared by a wet-laid method from (1) dividable composite fibers capable of producing polyolefin fine fibers, (2) high-strength fibers having a single-fiber strength of 5 g/denier or more, and (3) fusible fibers containing at least on a surface thereof a resin component having a melting point lower than a melting point of the dividable composite fibers and lower than a melting point of the high-strength fibers: by dividing the dividable composite fibers, entangling the fibers, and fusing the fusible fibers, to obtain a heat-fused and entangled nonwoven fabric, and imparting a hydrophilic property to the resulting heat-fused and entangled nonwoven fabric; wherein an average fiber length of the constituent fibers of the hydrophilic nonwoven fabric is 10 mm or more, is disclosed. The alkaline battery separator according to the present invention exhibits an excellent electrolyte-holding capacity, tensile strength, tear strength and bending resistance, and can be used to stably prepare a battery. An electrode flash rarely penetrates the separator to thereby cause a short circuit between electrodes.

19 Claims, 5 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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NUMC	Draw Desc	Image
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☒ 8. Document ID: US 5910357 A

L1: Entry 8 of 10

File: USPT

Jun 8, 1999

US-PAT-NO: 5910357

DOCUMENT-IDENTIFIER: US 5910357 A

TITLE: Separation membrane and method of producing the same, and shape memory polymer composition

DATE-ISSUED: June 8, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hachisuka; Hisao	Osaka			JP
Kondo; Yoshihiko	Osaka			JP
Ikeda; Kenichi	Osaka			JP
Takano; Hitoshi	Osaka			JP
Mochizuki; Amane	Osaka			JP

US-CL-CURRENT: 428/315.5; 210/500.21, 210/500.41

ABSTRACT:

A separation membrane and a method of producing the membrane are provided. The membrane can control its permselectivity and its fouled pores can be easily washed by using the reversible shape change of the membrane. For this purpose, porous shape memory polymers are used for the separation membrane.

22 Claims, 0 Drawing figures

Exemplary Claim Number: 1,18

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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ROAD	Draw Desc	Image
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☒ 9. Document ID: US 5733625 A

L1: Entry 9 of 10

File: USPT

Mar 31, 1998

US-PAT-NO: 5733625

DOCUMENT-IDENTIFIER: US 5733625 A

TITLE: Non-woven fabric

DATE-ISSUED: March 31, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Tsuchiya; Hideo	Moriyama			JP
Fujihashi; Mitsuru	Souwa-machi			JP
Miyakoshi; Yoshisato	Souwa-machi			JP
Yokoyama; Takahiro	Souwa-machi			JP
Hirohashi; Toshiaki	Souwa-machi			JP
Miyaguchi; Noriko	Kasukabe			JP

US-CL-CURRENT: 428/113; 428/131, 428/213, 442/334, 442/352, 442/408, 442/50

ABSTRACT:

A non-woven fabric in which large fiber bundles of the fabric intersect one another, small fiber bundles thereof intersect one another among said large fiber bundles, and the fibers of the fiber bundles are being entangled with one another among the

large fiber bundles, among the small fiber bundles and at the intersecting points of the fiber bundles, may be manufactured by fluid-entangling fiber webs on a support member having large pores to obtain said large fiber bundles therein; and further fluid-entangling fiber webs of the resultant intermediate on a support member having small pores from either the same direction or the opposite direction to form said small fiber bundles therein. The non-woven fabric has excellent draping property, covering property and abrasion resistance and can be used as an interlining, as a base material for synthetic leathers, as a variety of base materials, as an interior material, as a simple garment, as a medical gown, etc.

25 Claims, 3 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☒ 10. Document ID: US 5290645 A

L1: Entry 10 of 10

File: USPT

Mar 1, 1994

US-PAT-NO: 5290645
DOCUMENT-IDENTIFIER: US 5290645 A

TITLE: Battery separator and a battery

DATE-ISSUED: March 1, 1994

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Tanaka; Masanao	Ibaraki			JP
Tokutake; Nobutoshi	Ibaraki			JP
Kondo; Yoshihiko	Ibaraki			JP
Yamazaki; Hiroaki	Ibaraki			JP
Hirooka; Masaki	Ibaraki			JP
Kimura; Koji	Ibaraki			JP

US-CL-CURRENT: 429/144; 429/249

ABSTRACT:

A battery separator comprising a sheet material containing a polyvinyl alcohol cross-linked by a cross-linking group of the general formula (I): ##STR1## wherein A represents a group of --CH.dbd.CH--R.sub.1 or ##STR2## R.sub.1 represents an optionally substituted quaternary nitrogen-containing aromatic heterocyclic group, R.sub.2 and R.sub.3 independently represent a hydrogen atom or alkoxy group having 1 to 4 carbon atoms, m is 0 or 1, and n is an integer of 1 to 6, is disclosed.

The separator exhibits a good resistance to electrolyte, electrolyte holding rate, and resistant to short-circuits.

11 Claims, 5 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 3

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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L18: Entry 1 of 2

File: PGPB

Jul 11, 2002

PGPUB-DOCUMENT-NUMBER: 20020090876

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020090876 A1

TITLE: Battery separator

PUBLICATION-DATE: July 11, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Takase, Toshiaki	Ibaraki		JP	
Kondo, Yoshihiko	Ibaraki		JP	
Miyaguchi, Noriko	Ibaraki		JP	
Tanaka, Masanao	Ibaraki		JP	

US-CL-CURRENT: 442/363; 428/220, 442/333, 442/334

ABSTRACT:

Disclosed is a battery separator consisting essentially of a nonwoven fabric having a substantially unilayered structure, wherein an apparent total surface area of fibers per a surface density of the nonwoven fabric is 20 m.sup.2/m.sup.2 or more, a thickness of the nonwoven fabric is 0.1 mm or less, a uniformity index of the nonwoven fabric is 0.15 or less, and the nonwoven fabric contains fine fibers having a fiber diameter of 4 .mu.m or less.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	SMC	Draw Desc	Image
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☒ 2. Document ID: US 6200706 B1

L18: Entry 2 of 2

File: USPT

Mar 13, 2001

US-PAT-NO: 6200706

DOCUMENT-IDENTIFIER: US 6200706 B1

TITLE: Nonwoven fabric for separator of non-aqueous electrolyte battery and non-aqueous electrolyte battery using the same

DATE-ISSUED: March 13, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ashida; Tetsuya	Tokyo			JP
Tsukuda; Takahiro	Tokyo			JP

US-CL-CURRENT: 429/249; 429/247, 429/251

ABSTRACT:

The object of the present invention is to provide a nonwoven fabric for separators of non-aqueous electrolyte batteries which is superior in adhesion to electrodes, causes no breakage of the separator and neither slippage nor space between electrode and the separator at the time of fabrication of battery, provides superior battery processability such as rollability with electrodes, causes no internal short-circuit due to contact between electrodes caused by shrinking or burning of the nonwoven fabric even when electrodes generate heat owing to external short-circuit, whereby ignition of the battery can be inhibited, has no pin holes and is superior in retention of electrolyte and penetration of electrolyte, and which can give non-aqueous electrolyte batteries superior in capacity, battery characteristics and battery storage characteristics. Specifically, the nonwoven fabric for separators of non-aqueous electrolyte batteries according to the present invention has a thickness non-uniformity index (Rpy) of 1000 mV or less or a center surface average roughness SRa of 6 .mu.m or less in whole wavelength region as measured using a tracer method three-dimensional surface roughness meter.

21 Claims, 0 Drawing figures
Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	NMC	Draw Desc	Image
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L1: Entry 1 of 1

File: DWPI

May 11, 1999

DERWENT-ACC-NO: 1999-343525

DERWENT-WEEK: 199933

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TITLE: Separator for alkaline cell e.g. nickel cadmium battery - comprises non-woven fabric having specific thickness, basic weight and porosity

PRIORITY-DATA: 1997JP-0288920 (October 21, 1997)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<u>JP 11126595 A</u>	May 11, 1999		006	H01M002/16

INT-CL (IPC): D01 F 8/06; D04 H 1/54; H01 M 2/16; H01 M 10/24

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L1: Entry 1 of 1

File: DWPI

May 11, 1999

DERWENT-ACC-NO: 1999-343525

DERWENT-WEEK: 199933

COPYRIGHT 2003 DERWENT INFORMATION LTD

TITLE: Separator for alkaline cell e.g. nickel cadmium battery - comprises non-woven fabric having specific thickness, basic weight and porosity

PRIORITY-DATA: 1997JP-0288920 (October 21, 1997)

PATENT-FAMILY:

PUB-NO

PUB-DATE

LANGUAGE

PAGES

MAIN-IPC

JP 11126595 A

May 11, 1999

006

H01M002/16

INT-CL (IPC): D01 F 8/06; D04 H 1/54; H01 M 2/16; H01 M 10/24

Full	Title	CLS:1	SEQ:1	ATT:1
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(JP-11126595-\$.DID.).DWPI.	1

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